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SOME NEW SPECIES AND RECORDS OF NORTH AMERICAN
SCARABAEIDAE¹

(COLEOPTERA)

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The purpose of this paper is to describe three new species of Scarabaeidae belonging to the genera *Rhombonalia*, *Anomalacra*, and *Stephanucha* and to record several species not previously reported from North America.

One new record and specimens of one of the undescribed species were taken by the writer in southern Texas. For furnishing the other material included in this paper, the writer is indebted to Drs. George D. Butler, Jr., and Floyd G. Werner of the University of Arizona and to Dr. J. N. Knull of the Ohio State University. I would also like to express my gratitude to Mr. Hugh B. Leach who compared the undescribed species with related species in the California Academy of Science, to Mr. E. R. Leach of Piedmont, California, who examined the *Stephanucha*, and to Mr. O. L. Cartwright of the U. S. National Museum who examined the new species and concurred with the writer that they were undescribed. Thanks are also due Mr. O. Z. Oliver who aided with the preparation of the plate.

Rhombonalia Casey

Casey, 1915. *Memoirs on the Coleoptera*, VI: 5.

The species described below keys to the genus *Rhombonalia* in Casey's generic key (1915, p.3) of the Anomalini. However, the characters used by Casey to delimit the genus probably should be modified slightly.

Robinson (1941, p.132) in his description of *Rhombonalia adscita* notes that "the four anterior tarsi are cleft thus bringing this genus closer to *Anomala*." In the opinion of the writer the two genera are very close, since some of the species belonging to the genus *Anomala* occasionally lack the cleft tarsal claws. The narrow ligula is in some species of *Rhombonalia* shallowly emarginate approaching to a small degree the rather broadly emarginate ligula of *Anomala*. Other characters given by Casey seem to vary only slightly.

All of the known species of *Rhombonalia* are light tan, with the exception of the species described below which is dark brown.

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***Rhombonalia butleri* new species**

(Figure 8)

Male (holotype): Length, 11.6 mm.; greatest width, 6.5 mm. Dorsal color brown to dark brown with the vertex, margin of the clypeus, and part of the posterior margin of the pronotum brownish black. Brown elytra mottled with circular, irregularly spaced, brownish black spots. Pygidium darker anteriorly and posteriorly. Labrum 1 mm. wide and slightly emarginate. Clypeus (fig. 8) sharply reflexed anteriorly, less so laterally. Sides of the clypeus distinctly narrowed behind. Posterior elypeal suture vaguely indicated, not at all raised. Clypeus coarsely punctate on disk, the punctures not separated by more than their own diameter. Behind the clypeus the frons is slightly indented and coarsely rugosely punctate, the punctures becoming smaller and less distinct on the vertex.

Pronotum shiny, vaguely alutaceous, with scattered coarse punctures; completely narrowly margined with lateral margins slightly more arcuate anteriorly than posteriorly. Pronotum widest in posterior half, almost twice as wide as long at widest point, and quite convex. Posterior pronotal margin sinuate. Scutellum wider than long, only slightly elongate; vaguely concave with a few scattered punctures.

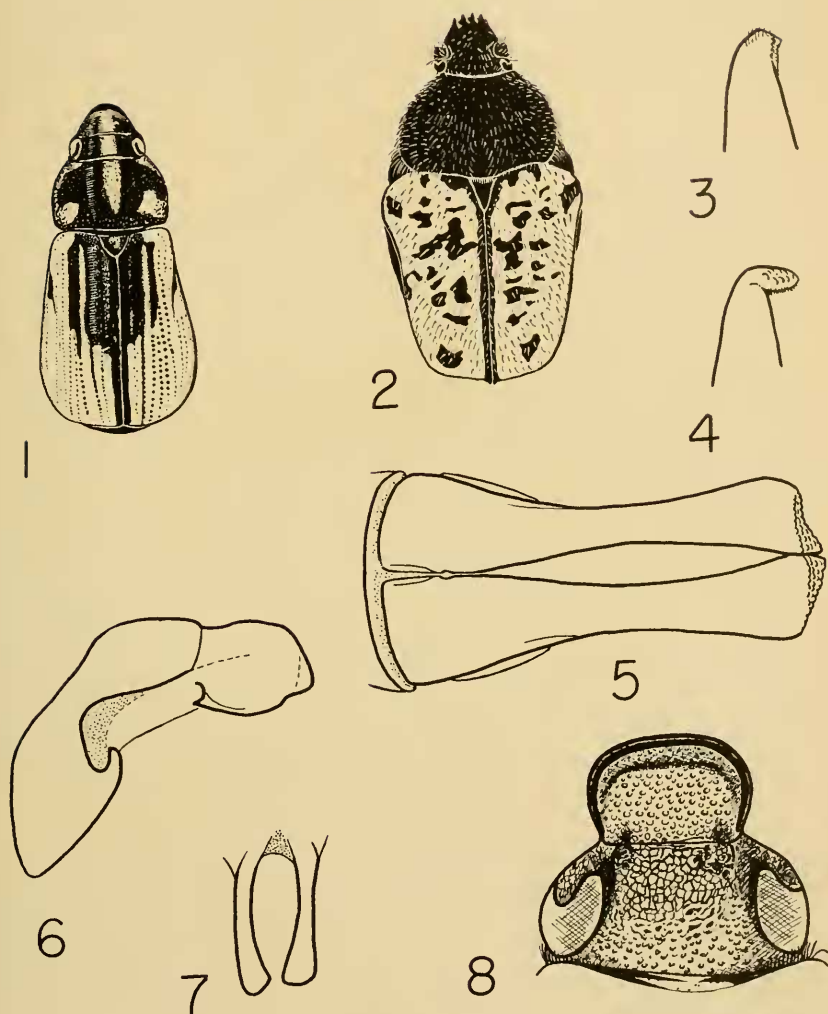
Elytra shiny, finely alutaceous with fine scattered punctures. Six vaguely indicated striae between suture and humeral umbone. Intervals rounded, three innermost ones transversely rugose. Elytra flared, widest in posterior third. Pygidium transverse with scattered punctures centrally, the area between the punctures being vaguely alutaceous. Dorsally the punctures become larger and irregular in outline with interspaces noticeably alutaceous. On either side of the midline the large dorsal punctures bear long yellow setae, there being about 16 setae on each side. Along the apical margin of the pygidium, there are also long scattered yellow setae and some vague punctures.

Ventral color brown to dark brown with coxae, femora and tibiae yellowish brown to brown. Ligula long and narrow as is the case with all the species of *Rhombonalia*. Antennal club 1-1½ times as long as stalk, last segment of club on outer surface shallowly but closely punctate, the bottoms of the punctures noticeably shiny. Prosternum narrowly separating the anterior coxae with a small median keel. Meso- and metasternum hairy with numerous distinct but shallow punctures. Abdominal segments shiny medially becoming alutaceous laterally. Except for the terminal segment there is an irregular row of coarse seta-bearing punctures across each segment. At the lateral margins the punctures become more irregular and the rows lose their continuity.

Anterior tibiae bidentate, tarsi with terminal segment enlarged with claws simple as is characteristic of most of the genus. Meso- and metafemora with scattered long setae over their entire surface. Meso- and metatibiae each with only one definite outer transverse carina slightly post-medial in position. The mesotibiae quite slender, the metatibiae thickened and enlarged. Posterior tarsi longer and heavier than either the anterior or middle tarsi.

Female.—Unknown.

Type material.—Holotype, ♂, Cochise Stronghold, Dragoon Mts., 4,850 ft., Ariz. Oak-juniper zone, July 21, 1949, at Light, F. Werner and W. Nutting. (Deposited on loan from the University of Arizona collection in the California Academy of Sciences.)



Anomalacra weneri n. sp.: fig. 1, holotype male; fig. 6, lateral view of male genitalia; fig. 7, apical view of tips of parameres. *Stephanucha anneae*, n. sp.: fig. 2, holotype male; fig. 4, tip of male genitalia; fig. 5, dorsal view of parameres. *Stephanucha areata* (Fab.): fig. 3, tip of male genitalia. *Rhombonalia butleri* n. sp.: fig. 8, head of holotype male.

Rhombonalia butleri can be separated from the other North American species by its dark color, indented clypeal suture, by the shape of the clypeus (see Fig. 8), and by the transversely rugose elytral intervals.

This species is named in honor of Dr. George D. Butler, Jr., who has been of great help in the accumulation of information on Arizona Scarabaeidae.

Anomalacra Casey

Casey, 1915. Memoirs on the Coleoptera, VI: 10.

Casey based this genus on characters exhibited by a single Mexican species, *Anomalacra cuneata* Casey. The species described here will key to *Anomalacra* (Casey 1915, p.3), but if placed in this genus several of the delimiting characters should be redefined.

In the species described below the labrum is very thin, almost invisible, the clypeus is elongate, thin and reflexed apically, being in this respect similar to *Anomalacra cuneata*. The ligula, while angularly emarginate anteriorly, is only slightly wider than long and in this respect seems related to *Anomala*. Since the type of *Anomalacra*, *A. cuneata*, is a female, several of the characters mentioned by Casey apply only to that sex. The slender anterior tarsus with the larger tarsal claw toothed at the outer third of the lower edge is characteristic only of the females. The males of the present species (the male of *cuneata* is unknown to the writer) have the anterior tarsus thickened with the larger claw cleft as is typical of males in the genus *Anomala*. If it were not largely for the elongate clypeus and very thin labrum, the genus *Anomalacra* probably should be considered synonymous with *Anomala*. However, until some intergradation of these characters with those of *Anomala* can be shown, the writer believes that the genus *Anomalacra* should be considered valid. The species described below is its only North American representative.

Anomalacra werneri new species

(Figures 1, 6, 7)

Male (holotype).—Length 7.3 mm.; greatest width 4.0 mm. Dorsal color yellowish tan mottled with dark brown. The head, disc of pronotum, scutellum, sutural interval and elytral margins dark brown. (fig. 1.) Labrum very thin, almost invisible. The clypeus, which overhangs the labrum, is remarkably elongate and sharply reflexed anteriorly, being only slightly reflexed laterally. Posterior clypeal suture slightly indented, extending in a straight line across the head. Surface of the clypeus slightly raised medially and rather evenly coarsely punctate, the punctures being slightly larger laterally and posteriorly. Head between the eyes coarsely punctate, the punctures being separated by 2 to 3 times their own diameter, becoming smaller along the posterior margin of the head. Edge of the eye canthus forming a very obtuse angle with the edge of the clypeus, the point of their juncture being slightly raised.

Pronotum quite convex, the surface evenly coarsely punctate, the punctures fewer and smaller medially. Area between the punctures shiny and slightly alutaceous. Midline of the pronotum vaguely indented. Laterally and posteriorly the pronotum is margined, the anterior margin becoming obsolete near the midline. Anterior pronotal angles acute, posterior angles obtuse. Lateral margins posteriorly almost parallel, but in the anterior half rather strongly convergent. Posterior margin of pronotum very vaguely bisinuate. Scutellum coarsely punctured, the punctures being similar to those of the pronotum.

Seven elytral striae between suture and humeral umbone. The second and fifth being very imperfect, indicated by rows of irregular punctures. Intervals convex, the ones adjacent to the second and fifth striae being somewhat less rounded. Posteriorly the elytra are slightly flared, being widest in the apical third, and it is at this point that the greatest width of the beetle was measured. Pygidium brown, rather uniformly scabrous. Parallel to the basal edge of the pygidium is a row of short indistinct setae. The apical margin of the pygidium bears a row of rather prominent setae, otherwise bare.

Ventral surfaces yellowish brown. Ligula almost as wide as long, shallowly emarginate and vaguely concave. Antennal club as long as stem; the club itself is long and slender, the outer surface of the last segment being finely punctured, the punctures separated by about their own diameter. Dark lines between punctures give a reticulate appearance. Middle coxae almost contiguous. Metasternum coarsely punctured laterally, becoming almost impunctate medially; posterior portion of midline sulcate. Abdominal segments with large shallow scattered punctures, the surface between these punctures becoming finely alutaceous laterally. Across each abdominal segment is an irregular row of setae which becomes more irregular laterally. The last abdominal segment is extremely narrow and slightly emarginate.

Fore tibiae bidentate. Apical tarsal segment enlarged with larger claw cleft as typical of males of genus *Anomala*. Mesotarsal claws with larger claw cleft but claw not enlarged as in anterior tarsus. Posterior tarsal claws simple. Meso- and metatibiae not noticeably thickened and of approximately the same length as their respective femora. Meso- and metatarsi slightly longer than their respective tibiae.

For details of male genitalia see figs. 6 and 7.

Female (allotype).—Length 8.5 mm.; greatest width 4.3 mm. Dorsal color and markings similar to male, but with the brown areas reddish instead of dark brown. Characters of head similar to those of male, the clypeus being slightly broader and more rounded. Pronotum with punctures more scattered and slightly smaller than holotype, the convexity of thorax even more apparent than in male. Punctures of scutellum and elytra smaller but otherwise the general configuration of the scutellum and elytra is like the holotype. Sides of the elytra less flared than in male, but widest point is still in posterior third. Shape of pygidium differs considerably from that of male, being almost a third again as long and considerably more convex. The surface is still more scabrous, the apical and basal setae are as described in male, but over the surface of the pygidium there are a few scattered setae. Ventrally the color, punctures and setae are quite similar to those described for the male. The antennal club is shorter being only two-thirds as long as stem. The anterior tarsi are not as enlarged as they are in male, and the larger tarsal claw instead of being cleft, has a small tooth directed

anteriorly. The mesotarsal claw is more deeply cleft and shorter than that of male. The meso- and metatarsi seem relatively shorter than in the male, being approximately the same length as the tibiae. Abdomen of female when viewed in profile is convex in outline, while in males the abdominal profile is concave. Last abdominal segment, while still narrow, is broader than that of male and is only very slightly emarginate.

Type material.—Holotype, ♂, Cochise Stronghold, Dragoon Mts., 4850 ft., Ariz., Oak-juniper zone, July 21, 1949. F. Werner and W. Nutting. (Type deposited on loan from University of Arizona collection in Calif. Acad. of Sciences). Allotype, ♀, with same data as type (Univ. of Ariz. collection). Two ♂ paratypes, 2 miles southwest Patagonia, Ariz., 4050 ft., willow-cottonwood zone, July 30, 1948, F. Werner, W. Nutting. (One paratype Howden collection, one paratype Univ. of Ariz. collection).

Variation.—The two male paratypes are 6.5 and 7.5 mm. in length and 3.5 and 3.7 mm. in width. General configuration is quite similar to that described for the holotype, but the markings of both paratypes are much more obscure. Dorsal color of both paratypes is a more even yellowish brown, the head of one being evenly brown, the other being darker between the eyes. Thoracic pattern is similar to that described for the holotype. Elytral markings on one of the paratypes is similar to the holotype, but only light brown. In the other paratype the markings are so vague as to be almost invisible. The characteristics of the head of both paratypes are similar to those of the male, but in the pronotum there is some variation. In one specimen the punctures are slightly less numerous and smaller, resembling closely those of the allotype. In the other paratype, the pronotal margins instead of being parallel in the posterior half are slightly convergent and sinuate. The configuration of the elytra is similar in all the specimens, but in one paratype the stria punctures are almost entirely lacking, and instead of punctures, the second and fifth striae are obscured by irregular transverse wrinkles. (The elytra of this specimen seem to be aberrant.) In all other respects the two male paratypes appear practically identical to the holotype. This species can be easily separated from the only other species in the genus, *Anomalacra cuneata* Casey, by its much smaller size, brown markings, and characteristic ligula.

It gives me a great deal of pleasure to name this species in honor of Dr. Floyd Werner who has sent me many interesting Arizona specimens.

Stephanucha Burmeister

Burmeister, 1842. Handbuch der Entomologie, III:349.

The North American representatives of this genus have, on occasion, been included in the genus *Euphoria*. While similar to *Euphoria*, the species belonging to the genus *Stephanucha* (*sensu stricto*) can be readily identified by the presence of four reflexed spiniform teeth at the anterior edge of the clypeus.

***Stephanucha anneae* new species**
(Figures 2, 4, 5)

Male (holotype).—Length 13.5 mm.; greatest width 7.8 mm. Dorsal color of head, pronotum, and scutellum black. Elytra dull yellowish brown, with irregular black markings. Clypeus anteriorly quadridentate, the teeth being sharply reflexed upward and longer than wide. The two median teeth are closer to each other than to the lateral teeth and are anterior to them. Behind these teeth the clypeus is densely, rugosely punctate with a small concavity on either side of the median line. Posteriorly on each side near the base of the clypeus, there is a small tooth overhanging the antennal insertion. The posterior clypeal suture is indistinct, the front and vertex of the head, being only slightly less punctate-rugose than the clypeus. Both the clypeus and head bear scattered long yellowish setae.

Pronotum heavily punctate, more so anteriorly. Pronotal disc shining. Laterally, between pronotal angles, there is a gray pruinose band approximately half a millimeter wide concealing almost entirely any lateral punctures. Near the posterior part of the midline is a dull impunctate area. Laterally and posteriorly the pronotal punctures bear scattered yellow setae; however, the median anterior third is almost bare, and the few setae in this area are short. Sides of pronotum just behind the anterior angles are slightly sinuate, and in the posterior half are almost parallel. The base of the pronotum is slightly sinuate on either side of the scutellum, being truncate in the area above the scutellum. Scutellum smooth, elongate, faintly shining.

Each elytron with two vague costae between suture and humeral umbone. Surface finely punctate and very feebly shining. Most of the punctures bear short, very fine yellow setae. Yellowish brown elytra marked in black in following manner (fig. 2): sutural costa around scutellum and two-thirds of elytral base, humeral umbone, apical protuberance and scattered spots along the two vague costae. Elytral apices vaguely pruinose, but not heavily punctate. Pygidium shiny black only along basal edge and median apical area. On either side of the midline there is a large pruinose spot varying from gray to white. The surface of the pygidium is finely, rugosely punctate with sparse yellowish white hairs.

Ventral surfaces brownish black, thorax almost entirely black. Antennae reddish brown except for basal two segments which are brownish black. Antennal club almost $\frac{1}{2}$ longer than stem. Ventral surfaces of head and thorax rather densely hairy. Lateral parts of metasternum rugose-punctate towards the midline. Metasternum with a vague median sulcus running over half its length. Much of the center of the metasternum is almost devoid of hairs, and between the punctures is shiny. Abdominal segments smooth and shining medially, while laterally each segment is basally punctate. Also laterally at the point where the abdomen curves under the elytra, there is a small pruinose spot on each of the first four abdominal segments. Abdominal hairs which are present in many of the lateral punctures are noticeably shorter than many of the thoracic hairs.

Legs brownish black, being slightly lighter at tibial apices. Fore tibiae tridentate, the upper tooth being almost median in position. Middle and hind legs very similar to those of *Stephanucha arcata*.

Male genitalia (figs. 4 and 5) with apices sharply curved downward and more widely flared than the genitalia of *Stephanucha arcata* (fig. 3).

Female.—Unknown.

Type material.—Holotype, ♂, two miles south Los Olmos Creek

and U.S. Rt. 77, Texas, May 31, 1954. H. F. Howden and W. Cloyd. (Type deposited in U.S. National Museum.) Paratype, ♂, same data as type (Howden collection).

Variation.—There is remarkably little variation between the holotype and the paratype. The length of the paratype is 13.3 mm., greatest width 7.5 mm. Pronotal setae are more pronounced anteriorly, but are short and fine as in the holotype. The lateral pruinose area of the pronotum is slightly more evident, but does not quite reach the anterior angles. The markings on the elytra are almost identical to that of the type, only the outline of the scattered spots varying slightly. Ventral aspects seem to be almost identical with the holotype with the exception of the setae which seem slightly longer in the paratype.

The two specimens were taken by Mr. Cloyd flying along the edge of a railroad embankment paralleling U.S. Route 77, approximately 2 miles south of Los Olmos Creek. Several other specimens were seen flying over the low and sparse vegetation in the area. The habitat was very sandy with open patches of white sand, being similar to that in which *Stephanucha areata* occurs in the southeast.

It gives me a good deal of pleasure to name this species after my wife who has been of tremendous help to me on many occasions.

Stephanucha anneae can be easily separated from the two closest species *S. areata* Fabr. and *S. pilipennis* Kr. by the following characters. *S. anneae* is larger than either of the two species, the black markings on the elytra cover considerably less area than on any specimens of the other two species the writer has examined. Dorsal setae are shorter and sparser than is the rule for *areata* and considerably shorter than *pilipennis*. *S. anneae* is more closely related to *areata* than to *pilipennis*, but is easily separated on any of the above characters.

The three species mentioned below do not appear to be recorded in the literature as occurring in North America. More than a single specimen has been seen of each of the following species:

Onthophagus incensus Say. Palm Jungle, Brownsville, Texas, June 1, 1954, H. F. Howden.

Cyclocephala lunulata Burmeister. Nogales, Arizona, August 4, 1953, D. J. and J. N. Knull.

Euphoria canescens Gory and Perch. Atascosa Mt., Arizona, October 3, 1938, R. A. Flock.

REFERENCE

- Robinson, Mark, 1941. Studies in the Scarabeidae of North America (Coleoptera). Pt. II, Seven new species of Scarabeidae. Trans. Amer. Ent. Soc. 67:131-136.